AD-A082 974 ARMY ELECTRONICS RESEARCH AND DEVELOPMENT COMMAND WS--ETC F/G 9/2
1970A MLRS, MISSILE NUMBER 007, ROUND NUMBER B-71, 7 JANUARY 0--ETC(U)
JAN 80

UNCLASSIFIED ERADCOM/ASL-DR-1112 NL

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REPORT DOCUMENTATION PAGE

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20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

Meteorological data gathered for the launching of 19704A MLRS, Missile Number 067, Round Number B-71 are presented in tabular form.

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE *(When Data Entered)*

CONTENTS

INTRODUCTION

19704A MLRS, Missile Number 067, Round Number B-71, was launched from BRILLO, White Sands Missile Range (WSMR), New Mexico, at 1530 MST on 07 January 1980. The scheduled launch time was 1530 MST.

DISCUSSION

Meteorological data were recorded and reduced by the White Sands Meteorological Team. Atmospheric Sciences Laboratory (ASL), White Sands Missile Range, New Mexico. The data were obtained by the following methods:

1. Observations

a. Surface

(1) Standard surface observations to include pressure, temperature (^{o}C), relative humidity, dew point (^{o}C), density (gm/m^3), Wind direction and speed, and cloud cover were made at the D 3½ Met Site at T-0 minutes.

(2) Anemometer data were provided from existing pole-mounted and tower-mounted anemometers at LC-33. Monitor of wind speed and direction from one anemometer was also provided in the launch control room.

b. Upper Air

(1) Low level wind data were obtained from RAPTS T-9 pibal observation at:

SITE AND ALTITUDE	
D 3½	2km
DENVER	2km

(2) Air structure data (rawinsonde) were collected at the following Met Sites. Data were collected from surface to 60,000 feet in 500-feet increments.

SITE AND TIME
NW 30 1530 MST

TABLE 1. Surface Observations taken at 1535 MST, 07 January 1980, at D 3½, 19704A MRLS, Missile Number 067, Round Number B-71.

ELEVATION	3975	FT/MSL
PRESSURE	870.9	MBS
TEMPERATURE	16.1	^{o}C
RELATIVE HUMIDITY	46	
DEW POINT	4.5	^{o}C
DENSITY		GM/M^3
WIND SPEED	15	KTS
WIND DIRECTION	270	DEGREES
CLOUD COVER	4	Sc
CLOUD COVER	6	Ac

PILOT BALLOON MEASURED WIND DATA

TABLE 2

RELEASED FROM D 3½ DATE 07 January 1980 TIME 1520 MST

TRACKER COORDINATES (WSTM) X=443,018.90 Y= 338,189.24 H 3974.89

NOTE: WIND DIRECTIONS ARE REFERENCED TO TRUE NORTH.

HEIGHTS ARE METERS AGL XX OR FEET AGL ____.

HEIGHT AGL	DIRECTION DEGREES	SPEED KTS
SFC	270	13
90	236	12
150	246	21
210	251	18
270	254	20
330	248	25
390	256	25
500	267	21
650	271	20
800	275	19
950	272	23
1150	273	23
1350	258	22
1550	271	26
1750	281	23
2000	279	27

HEIGHT AGL	DIRECTION DEGREES	SPEED KTS

HEIGHT AGL	DIRECTION DEGREES	SPEED KTS

PILOT BALLOON MEASURED WIND DATA

TABLE 3

RELEASED FROM D 3½ DATE 07 January 1980 TIME 1530 MST

TRACKER COORDINATES (WSTM) X=443,018.90 Y=338,189.24 H 3974.89

NOTE: WIND DIRECTIONS ARE REFERENCED TO TRUE NORTH.

HEIGHTS ARE METERS AGL XX OR FEET AGL ____.

HEIGHT AGL	DIRECTION DEGREES	SPEED KTS
SFC	260	14
90	273	12
150	267	18
210	271	19
270	271	20
330	272	18
390	275	18
500	273	18
650	259	20
800	254	18
950	260	16
1150	259	18
1350	256	18
1550	256	19
1750	265	27
2000	275	32

HEIGHT AGL	DIRECTION DEGREES	SPEED KTS

HEIGHT AGL	DIRECTION DEGREES	SPEED KTS

PILOT BALLOON MEASURED WIND DATA

TABLE 4

RELEASED FROM DENVER SITE DATE 07 January 1980 TIME 1530 MST

TRACKER COORDINATES (WSTM) X= 499,064.03 Y= 493,904.12 Z= 4123.10

NOTE: WIND DIRECTIONS ARE REFERENCED TO TRUE NORTH

HEIGHTS ARE METERS AGL X OR FEET AGL ____.

HEIGHT AGL	DIRECTION DEGREES	SPEED KTS
SFC	180	09
90	MISG	MISG
150	152	07
210	159	13
270	160	12
330	177	10
390	174	12
500	192	09
650	194	09
800	210	07
950	244	11
1150	255	19
1350	257	22
1550	261	26
1750	MISG	MISG
2000	MISG	MISG

HEIGHT AGL	DIRECTION DEGREES	SPEED KTS

HEIGHT AGL	DIRECTION DEGREES	SPEED KTS

STATION ALTITUDE 4010.40 FEET MSL
7 JAN. 80 1530 MRS MST
ASCENSION NO. 2

SIGNIFICANT LEVEL DATA
0070220002
NW 30

GEODETIC COORDINATES
32.88497 LAT DEG
106.49714 LON DEG

TABLE 5

PRESSURE MILLIBARS	GEOMETRIC ALTITUDE MSL FEET	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	REL.HUM. PERCENT
870.9	4010.4	16.2	4.6	46.0
850.0	4687.1	14.8	2.4	43.0
736.4	8596.7	3.9	-4.8	53.0
700.0	9941.7	.1	-6.9	59.0
679.2	10733.4	-2.0	-7.7	65.0
624.6	12903.3	-7.3	-9.2	86.0
572.2	15132.1	-11.4	-14.6	77.0
564.0	15496.3	-11.5	-15.7	71.0
555.0	15902.2	-11.2	-20.0	48.0
538.4	16668.2	-11.6	-19.9	50.0
500.0	18517.4	-16.1	-24.1	50.0
481.6	19441.6	-18.7	-24.0	63.0
473.6	19851.6	-19.8	-25.5	60.0
435.6	21872.0	-25.3	-25.4	99.0
400.0	23891.6	-29.6	-29.7	99.0
350.8	26933.1	-36.0	-36.1	99.0
344.2	27366.8	-36.7	-37.3	94.0
300.0	30450.8	-44.2	-46.1	81.0
276.0	32274.2	-48.6	-50.6	79.0
255.1	33962.6	-53.1		
250.0	34392.7	-51.6		
242.4	35050.4	-53.0		
221.4	36966.7	-54.9		
216.4	37448.7	-54.0		
206.4	38458.6	-49.9		
200.0	39137.2	-49.9		
183.0	41051.2	-49.9		
160.6	43848.1	-52.6		
150.0	45299.9	-53.3		
100.0	53691.6	-64.5		
88.8	56070.4	-67.4		
71.4	60428.7	-65.5		

STATION ALTITUDE 4010.40 FEET MSL
7 JAN. 80 1530 HRS MST
ASCENSION NO. 2

UPPER AIR DATA
0070220002
NW 30

GEODETIC COORDINATES
32.88497 LAT DEG
106.49714 LON DEG

TABLE 6

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
4010.4	870.9	16.2	4.6	46.0	1044.7	663.9	270.0	15.0	1.000271
4500.0	855.7	15.2	3.0	43.8	1030.4	662.6	264.6	17.0	1.000264
5000.0	840.3	13.9	1.8	43.8	1016.5	661.1	260.3	19.2	1.000259
5500.0	825.0	12.5	1.0	45.1	1003.0	659.5	256.8	21.5	1.000254
6000.0	810.0	11.1	.1	46.4	989.7	657.8	254.1	23.8	1.000249
6500.0	795.3	9.7	-.8	47.6	976.7	656.1	255.5	24.0	1.000245
7000.0	780.8	8.4	-1.7	48.9	963.8	654.5	257.3	24.1	1.000240
7500.0	766.6	7.0	-2.7	50.2	951.1	652.8	259.7	24.0	1.000236
8000.0	752.7	5.6	-3.6	51.5	938.6	651.2	262.8	23.7	1.000232
8500.0	739.0	4.2	-4.6	52.8	926.3	649.5	266.0	23.5	1.000228
9000.0	725.5	2.8	-5.4	54.8	913.8	647.8	270.7	23.0	1.000224
9500.0	711.8	1.3	-6.2	57.0	901.4	646.1	275.6	22.6	1.000220
10000.0	698.4	-.1	-7.0	59.4	889.2	644.4	279.0	22.6	1.000216
10500.0	685.3	-1.4	-7.4	63.2	876.7	642.9	281.6	22.7	1.000213
11000.0	672.2	-2.7	-7.8	67.6	864.1	641.3	282.4	23.8	1.000210
11500.0	659.4	-3.9	-8.1	72.4	851.4	639.9	280.8	26.0	1.000207
12000.0	646.8	-5.1	-8.4	77.3	839.0	638.4	279.4	28.3	1.000204
12500.0	634.4	-6.3	-8.9	82.1	826.7	637.0	276.2	31.3	1.000201
13000.0	622.2	-7.5	-9.5	85.6	814.4	635.6	273.5	34.4	1.000197
13500.0	610.1	-8.4	-10.7	83.6	801.5	634.4	270.9	37.9	1.000193
14000.0	598.2	-9.3	-11.9	81.6	788.7	633.3	268.5	42.1	1.000189
14500.0	586.6	-10.2	-13.1	79.6	776.1	632.1	266.5	46.1	1.000185
15000.0	575.2	-11.2	-14.3	77.5	763.8	631.0	264.7	48.2	1.000181
15500.0	563.9	-11.5	-15.7	70.8	749.9	630.5	263.0	49.5	1.000177
15000.0	552.9	-11.3	-20.0	48.3	734.8	630.7	260.4	46.2	1.000171
16500.0	542.0	-11.5	-19.9	49.6	721.0	630.4	260.1	44.5	1.000168
17000.0	531.3	-12.4	-20.6	50.0	709.2	629.3	260.9	44.2	1.000165
17500.0	520.8	-13.6	-21.8	50.0	698.5	627.8	261.8	45.8	1.000162
18000.0	510.5	-14.8	-22.9	50.0	687.9	626.4	262.6	48.0	1.000159
18500.0	500.3	-16.1	-24.0	50.0	677.5	624.9	263.1	51.1	1.000156
19000.0	490.3	-17.5	-23.9	56.8	667.6	623.2	263.3	53.9	1.000154
19500.0	480.5	-18.9	-24.2	62.6	657.7	621.5	263.0	55.7	1.000152
20000.0	470.7	-20.2	-25.4	62.9	647.9	619.8	262.7	57.6	1.000149
20500.0	461.1	-21.6	-25.2	72.5	638.0	618.1	261.4	57.9	1.000147
21000.0	451.6	-22.9	-25.1	82.2	628.3	616.5	259.9	58.1	1.000145
21500.0	442.4	-24.3	-25.2	91.8	618.8	614.8	258.7	58.6	1.000143
22000.0	433.3	-25.6	-25.7	99.0	609.2	613.2	257.8	59.9	1.000140
22500.0	424.2	-26.6	-26.7	99.0	599.1	611.9	257.0	61.3	1.000138
23000.0	415.3	-27.7	-27.8	99.0	589.2	610.5	256.4	62.9	1.000135
23500.0	406.7	-28.8	-28.9	99.0	579.4	609.2	256.1	64.8	1.000133

STATION ALTITUDE 4010.40 FEET MSL
7 JAN. 80 1530 HRS MST
ASCENSION NO. 2

UPPER AIR DATA
0070220002
NW 30
TABLE 6 (CONT)

GEODETIC COORDINATES
32.88497 LAT DEG
106.49714 LON DEG

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	TEMPERATURE DEWPOINT CENTIGRADE	REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
24000.0	398.1	-29.8	-29.9	99.0	569.7	607.8	255.7	66.8	1.000130
24500.0	389.6	-30.9	-31.0	99.0	560.0	606.5	255.4	67.5	1.000128
25000.0	381.3	-31.9	-32.0	99.0	550.5	605.2	255.1	68.2	1.000125
25500.0	373.2	-33.0	-33.1	99.0	541.1	603.9	254.9	68.8	1.000123
26000.0	365.2	-34.0	-34.1	99.0	531.9	602.5	254.7	69.3	1.000121
26500.0	357.4	-35.1	-35.2	99.0	522.9	601.2	254.4	70.0	1.000118
27000.0	349.8	-36.1	-36.3	98.2	513.9	599.9	254.0	71.6	1.000116
27500.0	342.2	-37.0	-37.7	93.4	504.7	598.7	253.5	73.1	1.000114
28000.0	334.6	-38.2	-39.1	91.3	496.1	597.2	252.4	74.2	1.000112
28500.0	327.2	-39.5	-40.5	89.2	487.7	595.6	251.3	75.5	1.000110
29000.0	320.0	-40.7	-42.0	87.1	479.5	594.1	250.2	77.3	1.000108
29500.0	313.0	-41.9	-43.4	85.0	471.4	592.5	249.3	79.3	1.000106
30000.0	306.1	-43.1	-44.8	82.9	463.5	590.9	248.9	81.6	1.000104
30500.0	299.3	-44.3	-46.2	80.9	455.6	589.4	248.5	83.7	1.000102
31000.0	292.6	-45.5	-47.5	80.4	447.7	587.8	248.3	85.3	1.000100
31500.0	285.9	-46.7	-48.7	79.8	439.9	586.2	248.2	86.9	1.000098
32000.0	279.5	-47.9	-49.9	79.3	432.3	584.7	247.8	86.1	1.000097
32500.0	273.1	-49.2	-52.4	68.4**	424.8	583.0	247.4	85.2	1.000095
33000.0	266.8	-50.5	-57.1	45.0**	417.5	581.3	247.0	83.3	1.000093
33500.0	260.7	-51.9	-63.9	21.6**	410.4	579.5	246.6	81.1	1.000091
34000.0	254.7	-53.0			402.9	578.1	246.6	79.7	1.000090
34500.0	248.7	-51.8			391.5	579.6	246.6	78.7	1.000087
35000.0	243.0	-52.9			384.3	578.2	246.7	77.9	1.000086
35500.0	237.3	-53.4			376.3	577.5	246.6	77.3	1.000084
36000.0	231.8	-53.9			368.3	576.8	246.4	76.8	1.000082
36500.0	226.3	-54.4			360.5	576.1	246.9	77.0	1.000080
37000.0	221.1	-54.8			352.7	575.6	247.3	77.1	1.000079
37500.0	215.9	-53.8			342.8	577.0	248.4	78.8	1.000076
38000.0	210.9	-51.8			331.8	579.7	249.5	80.8	1.000074
38500.0	206.0	-49.9			321.5	582.1	251.0	84.8	1.000072
39000.0	201.3	-49.9			314.1	582.1	252.3	89.1	1.000070
39500.0	196.7	-49.9			306.9	582.1	253.6	91.5	1.000068
40000.0	192.1	-49.9			299.8	582.1	254.9	93.3	1.000067
40500.0	187.7	-49.9			293.0	582.1	256.0	94.4	1.000065
41000.0	183.4	-49.9			286.2	582.1	256.8	92.7	1.000064
41500.0	179.2	-50.3			280.2	581.5	257.6	91.0	1.000062
42000.0	175.1	-50.8			274.3	580.9	258.1	88.7	1.000061
42500.0	171.0	-51.3			268.6	580.3	258.4	86.1	1.000060
43000.0	167.1	-51.8			262.9	579.6	258.7	83.2	1.000059
43500.0	163.2	-52.3			257.4	579.0	258.8	79.8	1.000057

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 4010.40 FEET MSL
7 JAN. 80 1530 MRS MST
ASCENSION NO. 2

UPPER AIR DATA
0070220002
NW 30

GEODETIC COORDINATES
32.68497 LAT DEG
106.49714 LON DEG

TABLE 6 (CONT)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
44000.0	159.5	-52.7			251.9	578.5	259.0	76.3	1.000056
44500.0	155.8	-52.9			246.4	578.1	258.2	73.2	1.000055
45000.0	152.1	-53.2			240.9	577.8	257.3	70.1	1.000054
45500.0	148.6	-53.6			235.7	577.3	256.1	68.6	1.000052
46000.0	145.0	-54.2			230.8	576.4	254.6	69.4	1.000051
46500.0	141.5	-54.9			225.9	575.5	253.2	70.2	1.000050
47000.0	138.2	-55.6			221.2	574.7	252.6	73.6	1.000049
47500.0	134.9	-56.2			216.6	573.8	252.1	77.0	1.000048
48000.0	131.7	-56.9			212.1	572.9	251.7	80.1	1.000047
48500.0	128.5	-57.6			207.7	572.0	251.5	80.4	1.000046
49000.0	125.4	-58.2			203.3	571.1	251.2	80.7	1.000045
49500.0	122.4	-58.9			199.1	570.2	251.0	81.0	1.000044
50000.0	119.5	-59.6			195.0	569.3	251.2	80.8	1.000043
50500.0	116.7	-60.2			190.9	568.5	251.6	80.2	1.000043
51000.0	113.9	-60.9			186.9	567.6	252.1	79.6	1.000042
51500.0	111.2	-61.6			183.0	566.7	252.5	79.0	1.000041
52000.0	108.5	-62.2			179.2	565.8	253.8	78.3	1.000040
52500.0	105.9	-62.9			175.5	564.9	255.0	77.7	1.000039
53000.0	103.4	-63.6			171.9	564.0	256.3	77.1	1.000038
53500.0	100.9	-64.2			168.3	563.1	257.5	76.2	1.000037
54000.0	98.5	-64.9			164.7	562.2	258.8	74.9	1.000037
54500.0	96.0	-65.5			161.1	561.4	260.1	73.6	1.000036
55000.0	93.7	-66.1			157.6	560.6	261.4	73.1	1.000035
55500.0	91.4	-66.7			154.2	559.8	262.6	73.2	1.000034
56000.0	89.1	-67.3			150.8	558.9	263.8	73.4	1.000034
56500.0	86.9	-67.2			147.0	559.1	265.5	73.0	1.000033
57000.0	84.8	-67.0			143.2	559.4	267.4	72.5	1.000032
57500.0	82.7	-66.8			139.5	559.7	269.3	72.0	1.000031
58000.0	80.6	-66.6			136.0	560.0	270.7	70.8	1.000030
58500.0	78.6	-66.3			132.5	560.2	272.1	69.7	1.000029
59000.0	76.7	-66.1			129.0	560.5			1.000029
59500.0	74.8	-65.9			125.7	560.8			1.000028
60000.0	72.9	-65.7			122.5	561.1			1.000027

STATION ALTITUDE 4010.40 FEET MSL
7 JAN. 80 1530 HRS MST
ASCENSION NO. 2

MANDATORY LEVELS
0070220002
NW 30

GEODETIC COORDINATES
32.88497 LAT DEG
106.49714 LON DEG

TABLE 7

PRESSURE MILLIBARS	GEOPOTENTIAL FEET	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	REL.HUM. PERCENT	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS
850.0	4684.	14.8	2.4	43.	262.9	17.8
800.0	6353.	10.2	-.5	47.	255.0	24.0
750.0	8100.	5.3	-3.8	52.	263.4	23.7
700.0	9932.	.1	-6.9	59.	278.6	22.6
650.0	11864.	-4.8	-8.3	76.	279.9	27.7
600.0	13914.	-9.2	-11.7	62.	268.9	41.5
550.0	16111.	-11.3	-20.0	49.	259.8	45.4
500.0	18493.	-16.1	-24.1	50.	263.1	51.2
450.0	21061.	-23.2	-25.1	84.	259.7	58.1
400.0	23853.	-29.6	-29.7	99.	255.8	66.3
350.0	26938.	-36.1	-36.2	98.	254.0	71.5
300.0	30393.	-44.2	-46.1	81.	248.5	83.5
250.0	34320.	-51.6			246.6	78.9
200.0	39046.	-49.9			252.7	90.2
175.0	41909.	-50.8			258.1	88.7
150.0	45181.	-53.3			256.8	68.4
125.0	48989.	-58.3			251.2	80.7
100.0	53529.	-64.5			258.0	75.8
80.0	57962.	-66.5			271.0	70.5